ABSTRACT

A fuzzy logic control arrangement is provided for an impedance match network of the type that is typically employed between a source of RF power at a given impedance, e.g., 50 ohms, and a non-linear load whose impedance can vary in magnitude and phase, e.g., an RF plasma. The fuzzy logic controller fuzzifies the phase and the magnitude error signals. The error signals are applied to a fuzzy logic inference function based on a number of fuzzy sets. The values of the error signals enjoy some degree of membership in one or more fuzzy sets. Fuzzy logic rules are applied to the phase and magnitude error signals. In a defuzzification stage, drive signal values are obtained for moving the tuning elements of the variable impedances. The drive signal values are weighted according to respective fuzzy inference functions for which the error signals enjoy membership. Then the weighted drive signal values are combined to produce output drive signals.